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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/742,255	12/20/2000	Christopher Chedghey	10734-003-999	8068
20583	7590	06/02/2005	EXAMINER	
JONES DAY 222 EAST 41ST ST NEW YORK, NY 10017			KENDALL, CHUCK O	
			ART UNIT	PAPER NUMBER
			2192	
DATE MAILED: 06/02/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/742,255

Applicant(s)

CHEDGEY ET AL.

Examiner

Chuck Kendall

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2005.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 and 11-21 is/are pending in the application.
4a) Of the above claim(s) 10 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-9, 11-21 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the application filed 02/16/05.
2. Claim 10 has been cancelled and claims 1 – 9, and 11 – 14 have been amended, and claims 15 – 21 have been added.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 20 and 21 rejected under 35 U.S.C. 102(b) as being anticipated by Broekhuijsen USPN 5,940,083.

Regarding claim 20, Broekhuijsen anticipates a system for representing the relationship among elements of a complex system comprising:

a tree comprising a plurality of subtrees each said subtree comprising a root node and one or more nodes (13:1 – 10); and

a relationship among the root nodes of said subtrees, said relationship including a dependency relationship, where for each pair of said subtrees not sharing any common node (13:1 – 10); there exists a relationship between the root nodes of said pair of subtrees, if there exists a relationship between a node in one subtree of said pair of subtrees and a node in the other subtree of said pair of subtrees (6:40 – 60).

Regarding claim 21, the system of claim 20, wherein the complex system is a software comprising a plurality of software entities and the relationship includes reference dependency among the software entities.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 11 – 19 are rejected under 35 U.S.C. 102(b) as being unpatentable over Brotsky et al. USPN 5,490,246 in view of Broekhuijsen USPN 5,940,083.

Regarding claim 1, Brotsky discloses a software analysis tool (19: 3 – 5) comprising:

means for converting software entities and their relationships into a graph having a structure of nodes interconnected by edges (3:20 – 40, see interconnected nodes and edges, also see & 45 – 55), and an editor comprising means for allowing a user to edit the graph (3:5 – 10 and FIG.3, and associated text). Although, Brotsky doesn't disclose having said graph further comprising a tree comprising a plurality of subtrees, each said subtree, representing one or more nodes in the graph, and subtrees representing the edges as well as replace the displayed node with one or more embedded child nodes in response to the user action, Brotsky does disclose an internal state for the source

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nodes in 20:11 – 19 as well as adding and deleting new nodes see FIG. 18 A and 18B. Broekhuijsen in a similar configuration and analogous art discloses parent nodes which are linked to child nodes and which are also in turn linked to other nodes and linked by edges (12:65 – 13:10), as well as being able to replace nodes (17:27 – 30). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen because, the process of dividing and subdividing sequences provides an automatic rank step (Broekhuijsen, 12:45 – 50).

Regarding claim 11, Brotsky discloses a dependency analysis comprising;

a node class for instantiating node objects in memory representing aspects of an analyzed system as nodes of a graph (17: 5 – 10, shows node class);

a connection class for instantiating connection objects in memory representing dependencies between aspects of an analyzed system (19:45 – 65, see Transducers and class) also see (18:25 – 30, for instances);

an edge class for instantiating edge objects representing collections of one or more connections or edges (17: 12, see graphics operator class). Although, Brotsky doesn't disclose having said graph further comprising a tree comprising a plurality of subtrees, each said subtree, representing one or more nodes in the graph, and subtrees representing the edges as well as replace the displayed node with one or more embedded child nodes in response to the user action, Brotsky does disclose and internal state for the source nodes in 20:11 – 19 as well as adding and deleting new nodes see FIG. 18 A and 18B. Broekhuijsen in a similar configuration and analogous art discloses parent nodes which are linked to child nodes and which are also in turn linked to other nodes and linked by edges (12:65 – 13:10), as well as being able to replace nodes (17:27 – 30). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen because, the process of dividing and subdividing sequences provides an automatic rank step (Broekhuijsen, 12:45 – 50).

Regarding claim 12, the dependency analysis system of claim 11, further comprising:

at least one subclass of the node class, the subclass being specific to a particular category of system (Brotsky, 19:45 – 55, see meta class and class of node).

Regarding claim 13, Brotsky discloses, dependency analysis system recorded on a computer-readable medium, comprising:

a graph model data structure for storing dependency information derived through the abstraction layer from third-party tools (Brotsky, 19:35 – 40, see support for raster model and Quick draw and see 20:5);

a rendering system for providing a plurality of views of the graph model data structure (Brotsky, Fig.4 see viewer A and E), providing a uniform interface to third-party analysis tools (Brotsky, 14:10 – 15, see importing source and editors). Although, Brotsky doesn't disclose having said graph further comprising a tree comprising a plurality of subtrees, each said subtree, representing one or more nodes in the graph, and subtrees representing the edges as well as replace the displayed node with one or more embedded child nodes in response to the user action, Brotsky does disclose and internal state for the source nodes in 20:11 – 19 as well as adding and deleting new nodes see FIG. 18 A and 18B. Broekhuijsen in a similar configuration and analogous art discloses parent nodes which are linked to child nodes and which are also in turn linked to other nodes and linked by edges (12:65 – 13:10), as well as being able to replace nodes (17:27 – 30). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen because, the process of dividing and subdividing sequences provides an automatic rank step (Broekhuijsen, 12:45 – 50).

Regarding claim 15, Brotsky discloses all the claimed limitations as applied in claim 14 above. Brotsky doesn't explicitly a one to many mapping from a first directed graph to a second directed graph, wherein every element in the first directed graph corresponds to exactly one element in the second directed graph, and any element in the second directed graph corresponds to one or more elements in the first directed graph. However, Broekhuijsen does discloses in a similar configuration and analogous art linking one or more nodes having parent or child relationships as well as a multi curve object corresponding to numerous nodes see (7:65 – 8:10, also see Fig. 2, 60,

b,c,d and e). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen because, it would simplify calculation, stabilize changes and eliminate redundancy or unnecessary precision (Broekhuijsen,8:55 – 60).

Regarding claim 16, see rationale in claim 15 above.

Regarding claim 17, Brotsky discloses all the claimed limitations as applied in claim 1 above. Although, Brotsky doesn't explicitly disclose a meta node and edge representing a first child graph, said first child graph further comprising a meta node and edge representing a second child graph, Brotsky does disclose and internal state for the source nodes in 20:11 – 19 as well as adding and deleting new nodes see FIG. 18 A and 18B. Broekhuijsen in a similar configuration and analogous art discloses parent nodes which are linked to child nodes and which are also in turn linked to other nodes and linked by edges (12:65 – 13:10), as well as being able to replace nodes (17:27 – 30). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen because, the process of dividing and subdividing sequences provides an automatic rank step (Broekhuijsen, 12:45 – 50).

Regarding claim 18, see rationale in claim 15 above.

Regarding claim 19, see rationale in claim 15 above.

7. Claims 2 & 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brotsky et al. USPN 5,490,246 in view of Broekhuijsen USPN 5,940,083 as applied in claim 1, in view of Guy E. Blelloch Provably Efficient Scheduling for Languages with Fine-Grained Parallelism, Published 1999.

Regarding claim 2, Brotsky as modified by Broekhuijsen discloses all the claimed limitations as applied in claim 1. The combination of Brotsky and Broekhuijsen doesn't explicitly disclose bi-directionally folding and unfolding a graph between meta and child levels. However, Blelloch does disclose this feature (Pg, 311,5.4.2 see bi-directional and siblings for child levels, also refer to pg. 301, 4.1. for unfolding). Therefore it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky and Broekhuijsen with Blelloch, because folding and unfolding operations are a general practice in the graphics field and makes the program more modifiable.

Regarding claims 3, a software analysis tool as claimed in claim 1 or 2, wherein the editor comprises means for automatically generating fresh graph layouts after manipulation (Brotsky, 3:20 – 25).

8. Claims 4 – 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Brotsky et al. USPN 5,490, in view of Broekhuijsen USPN 5,940,083 as applied in claim 1, in view of Perttunen USPN 6,359,635.

Regarding claim 4, Brotsky as modified by Broekhuijsen discloses all the claimed limitations as disclosed in claim 1 as well as comprising software program code, as discussed above in claim 1. The combination of Brotsky and Broekhuijsen, doesn't explicitly disclose wherein the conversion means comprises a plurality of back-ends, each being associated with an aspect of a software system. However, Perttunen discloses a backend (21:58-60 for backend see database). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Brotsky as modified Broekhuijsen with Perttunen because, it would allow the system to be able to retrieve or store information and hence make it more efficient.

Regarding claim 5, a software analysis tool as claimed in claim 4, wherein each back-end comprises means for converting the entities and the relationships of the associated aspect into nodes and edges of the graph (Brotsky, 3:30 – 45).

Regarding claim 6, a software analysis tool as claimed in claims 4, wherein the back-ends are associated with managers (Brotsky, 21:10 – 15, for manager see user and user selectable and viewing).

Regarding claim 7, a software analysis tool as claimed in claim 6, wherein the managers comprise means for routing commands between the editor and the back-ends (Brotsky, 21:58 – 60 for backend see database and modifying).

Regarding claim 8, a software analysis tool as claimed in claims 6, wherein each manager is associated with a group of back-ends associated with a group of back-ends (Brotsky, 21:58 – 60 for backend see database).

Regarding claim 9, a software analysis tool as claimed in claim 8, wherein the back-ends associated with a particular manager share a common interface and set of operations (Brotsky, 21:10 – 15, see user interface).

Response to Arguments

9. Applicant's arguments with respect to claims 1 – 9, & 11 - 21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chuck Kendall whose telephone number is 571-272-3698. The examiner can normally be reached on 10:00 am - 6:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Dam can be reached on 571-272-3695. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CK,



WEI Y. ZHEN
PRIMARY EXAMINER